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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,985	02/21/2006	Yukihiro Morita	504780100	3592

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EXAMINER	
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ART UNIT	PAPER NUMBER
2829	

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05/27/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/568,985	MORITA ET AL.	
	Examiner	Art Unit	
	ARLEEN M. VAZQUEZ	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,13,14 and 26-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,13,14 and 26-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/06/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments (see pages 10-14, filed on 01/21/2009), with respect to claims 1, 5, 9 and 13 have been fully considered and are persuasive. The Non Final Rejection of 10/21/2008 has been withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2,5-6,9,13-14 and 26-27 are rejected under 35 U.S.C. 102(b) as being anticipated by **Lo et al. (US 6,232,787).**

NOTE: As to limitations of "during ion radiation" and "after irradiation has stopped" recited in claims 1,5,9,10,13,31, it must be noted that a structure claim must differentiate from the prior art of record in terms of what it is rather than what it does. Reciting that a certain element is "operative to" points to a method of "how to use" the device and it does not serve to differentiate from prior art that anticipates all structural limitations claimed.

As to claims 1-2,5-6,9,13-14 and 26, **Lo et al.** discloses in Figures 1-7 an insulating film measuring device for evaluating properties of an insulating film on a conductive substrate (wafer 114 in Figure 1 comprises an insulating layer 410 and a conductive substrate 405 as shown in Figure 4), the insulating film measuring device

comprising an ion irradiating unit (120 in combination with 124 emits a focused ion beam, Col.15 lns 11-16) irradiating the insulating film (410) with ions; a voltage applying unit (136) applying a negative voltage (Col. 4 lns 40-58) to the insulating film during ion irradiation (by 120 and 124) and an spectrum measurement unit (spectrometer 126) measuring a spectrum of secondary electrons emitted from the insulating film during ion irradiation and/or ion irradiation has stopped (Col. 4 lns 59-65, Col. 6 lns 50-57) , wherein the spectrum measurement unit (spectrometer 126) measures, over time, the spectrum of secondary electrons emitted from the insulating film and also measuring a density of states (as shown in Figures 6A-6C).

As to claim 27, **Lo et al.** discloses in Figures 1-7 means (110 and 118) for applying a vacuum to the insulating film during the measurement of the spectrum of secondary electrons (Col. 5 lns 21-42).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3-4,7-8,10,29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lo et al. (US 6,232,787)** in view of **Testoni et al. (7,030,375)**.

As to claims 3-4,7-8,10,29 and 31, **Lo et al.** discloses everything above but fails to teach a variation detection unit detecting, based on a secondary electron spectrum measurement result measured over time by the spectrum measurement unit, at least

one of an amount of variation of a rise position of a peak due to kinetic emission of secondary electrons and a rate of variation of the rise position, an intensity detection unit configured to detect detecting, based on a spectrum measured by the spectrum measurement unit, an intensity of a peak appearing at a lower energy level than a peak due to kinetic emission of secondary electrons and a determining unit determining, after ion irradiation has stopped, based on the spectrum measured by the spectrum measurement unit, an energy difference between a first peak due to kinetic emission of secondary electrons measured during ion irradiation and a second peak appearing at a lower energy level than the first peak and a variation detection unit connected to the spectrum measurement unit to measure a conveyance time, T1 and a shift amount change in E, wherein conveyance time, T1, is a time period from starting an irradiation measurement to convergence of a rise position of a subsequent measurement and change in E is the amount of energy.

However, **Testoni et al.** discloses in Figures 2-5 a variation detection unit and an intensity detection unit (122) and a determining unit (118) detecting variation in peaks due to kinetic energy (Figure 3A) and intensity of peaks due to variation in energy levels (Figure 3B) and detecting variation in time due a variation in energy (also see Figure 4 and Col. 8 lns 8-61).

It would have been obvious for one ordinary skill in the art at the time the invention was made to modify the teachings of **Lo et al.** by having a variation unit, an intensity unit and a determining unit as taught as **Testoni et al.** to analyze different

characteristics from the electrons emitted from the insulating film to determine faults or malfunctioning of the insulating film to avoid poor quality.

6. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Lo et al. (US 6,232,787)** in view of **Hamamura et al. (US 6,303,932)**.

As to claim 27, **Lo et al.** discloses everything above but fails to teach wherein the ion irradiating unit irradiates argon ions. However, **Hamamura et al.** discloses in Figure 1 means wherein the ion irradiating unit (2) irradiates argon ions (Col. 14 lns 18-22).

It would have been obvious for one ordinary skill in the art at the time the invention was made to modify the teachings of **Lo et al.** by irradiating argon ions as taught as **Hamamura et al.** to analyze particular characteristics of the insulating film using argons ions to determine faults accurately also assuring good quality.

7. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Lo et al. (US 6,232,787)** in view of **Hamamura et al. (US 6,303,932)** further in view of **Fries (US 6,764,796).**

As to claim 28, the combination of **Lo et al.** in view of **Hamamura et al.** discloses everything above but fails to teach wherein the insulating film is MgO. However, **Fries** discloses in Figure 2 wherein the insulating film (35) is MgO.

It would have been obvious for one ordinary skill in the art at the time the invention was made to modify the combined teachings of ***Hamamura et al.*** and ***Brust***

by having an insulating film of MgO as taught as ***Hamamura et al.*** to prevent damage to the substrate from ions and to allow the device to operate at lower voltages.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arleen M. Vazquez whose telephone number is 571-272-2619. The examiner can normally be reached on Monday to Friday, 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ha Nguyen can be reached on 571-272-1678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. M. V./

Examiner, Art Unit 2829

05/22/2009

/Ha T. Nguyen/

Supervisory Patent Examiner, Art Unit 2829